

REMARKS

Claims 4, 5, 6, 8 and 9 have been amended to improve clarity and to obviate the objection to claims 8 and 9.

In the Office Action claims 1, 4, 7-9 were rejected as being unpatentable over US 2004/0050349 Leman et al. in view of US 4,050,359 Mayer, and further in view of US 2002/0157531 Kadlicko. Reconsideration is requested.

Claim 1 calls for “a cylindrical liner received in an upper portion of the housing, the liner internally defining a cylinder and riding surface receiving a reciprocable piston subassembly... the liner cylinder being open to receive pressurized fluid to axially move the piston subassembly within the cylinder; and a drive piston position sensor extending into the housing and engaging a cam on the drive piston to sense the position of the drive piston within the cylinder.”

The combination of Leman, Mayer and Kadlicko fails to teach or suggest a drive piston position sensor extending into the housing and engaging a cam on the drive piston and a cylindrical liner received in an upper portion of the housing.

In the Office Action, it is suggested that Mayer teaches a cylindrical liner that is combinable with the housing of Leman. However, there is no motivation to combine the cylindrical liner of Mayer with the housing of Leman without the teaching of the applicant's claimed invention. The purpose of the cylindrical liner of Mayer is to define a passage-way 83 between the opposite ends of the cylinder to provide oil pressure to each side of the piston to expand and retract rod 63. The valve actuator 10 of Leman, only requires pressurized fluid on one side of the housing in chamber 50 to exert force on the second surface 44 of the first piston 20 and the second surface 48 of the second piston 22 for valve actuation. Since the valve actuator of Leman only requires pressurized fluid in chamber 50 to act upon the second surfaces 44, 48 of the pistons 20, 22, there is no motivation to combine the liner of Mayer with the body 10 of Leman to create a transfer passage way 83 between opposite ends of the cylinder unit to provide pressurized fluid to chambers on opposite surfaces, 42, 46 of the pistons 20, 22. Further,

since the two pistons of Leman each reciprocate in separate bores of his housing, it is not obvious how the disclosures of the two references could reasonably be combined.

In the Office Action, it is suggested that the further combination of Kadlicko teaches a drive piston position sensor extending into the housing and engaging a cam on the drive piston to sense the position of the drive piston within the cylinder. The position sensor of Kadlicko utilizes Hall effect sensors 112 that are positioned in close proximity to the surface 36 of the piston rod 22. As shown in FIG. 3, the piston rod 22 has a steel body 122 with a helical thread 124 formed on the outer surface. The flanks of the thread 124 provide an undulating interface that progressively and continuously vary in distance from the transducer as the rod moves relative to the cylinder. This does not teach or suggest a drive piston position sensor extending into a housing and engaging a cam on the drive piston to sense the position of the drive piston within the cylinder as claim 1 requires.

Therefore, combining Kadlicko with the combination of Leman and Mayer does not suggest using a drive position sensor extending through the housing and engaging a cam on the drive piston to sense the position of the drive piston within the cylinder as claim 1 requires.

In sum, the combination of Leman, Mayer and Kadlicko does not provide either an anticipation or any teaching that would make the claimed arrangement of applicant's invention obvious in view of this prior art; therefore, claim 1 is believed allowable and the rejection should be withdrawn.

Claim 4 calls for a valve actuator similar to claim 1 including a housing internally defining a stepped bore having an upper major diameter, a middle intermediate diameter, and a lower minor diameter; a cylindrical liner received in the major diameter of the stepped bore... the liner cylinder being open to the major diameter of the stepped bore... a drive piston position sensor extending radially into the housing and operable to determine the position of the drive piston within the cylinder. As previously discussed, the combination of Leman, Mayer and Kadlicko fails to teach or suggest the use of a

cylindrical liner. Therefore, the rejection of claim 4 as well as those of dependent claims 7-9, have no substantial basis.

Claims 2 and 3 were rejected as being unpatentable over Leman in view of Mayer in further view of Kadlicko and further in view of US 4,162,616 Hayashida. Reconsideration is requested.

As previously discussed, the combination of Leman, Mayer and Kadlicko fail to anticipate claim 1. Since Hayashida also fails to teach or suggest using a cylindrical liner or a drive piston having a cam and a drive piston position sensor extending through the housing engaging the cam on the drive piston to sense the position of the piston as claim 1 requires, the combination of Leman, Mayer, Kadlicko and Hayashida fails to anticipate claim 1. As a result, claims 2 and 3 being dependent upon claim 1, are also believed allowable for this reason as well as for their additional recitations.

Claims 5 and 6 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim. As previously discussed claim 4 is believed to be allowable therefore, dependant claims 5 and 6 are also believed to be allowable.

For the foregoing reasons, the rejections of claims 1-4 and 7-9 as well as the objections to claims 5-8 should be withdrawn. Such action should place this case in condition for allowance and is respectfully requested.

New claim 10 is supported by paragraph [0027] of the specification, which states that, "servicing the valve actuator 20 is accomplished by removing the liner 48 and piston subassembly 56 from the housing 30."

New claim 10 being similar to claim 1 is believed to be allowable for the same reasons as claim 1 as well as for the additional recitations of claim 10.

New claim 11 is supported by paragraph [0008] of the specification, which states that, "the valve actuator is preassembled and the housing is attached to the hydraulic supply manifold by inserting a portion of the housing into a recess provided in

the manifold and fastening the housing to the manifold.” Claim 11 is further supported by paragraph [0023] of the specification, which states that, “the valve actuators are attached to the hydraulic supply manifolds, as shown in FIGS. 3 and 4... each supply manifold 22 has bores 70 for receiving the upper portions 38 of the associated valve actuators... Once the valve actuator 20 is inserted into the bore 70, a flange 72 extending from the exterior of the housing 30 is bolted or attached to the supply manifold 22.

New claim 11 being similar to claim 1 is believed to be allowable for the same reasons as claim 1 as well as for the additional recitations of claim 11.

This amendment is believed to be fully responsive to the issues raised in the Office Action and to place this case in condition for allowance. Favorable action is requested.

A PTO-2038 authorizing payment of the additional claim fee of \$86.00 is enclosed.

Respectfully submitted,

By 

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